

REMARKS

At the outset, the Applicants wish to thank Patent Examiner Patrick Buechner for the many courtesies extended to the undersigned attorney during the Personal Interview on February 3, 2005 at the U.S.P.T.O. The substance of this Personal Interview is set forth in the Examiner Interview Summary, and in this Amendment.

Enclosed is a copy of an Appointment of an Associate Power of Attorney for the undersigned attorney.

The amendments to the claims are as follows. The amendment to claim 11 is to recite a mixture consisting essentially of a biocide and carbon dioxide wherein the biocide is selected from a group where chlorine gas is always a constituent.

This appears to overcome the rejection of record. As stated by the Patent Examiner during the Personal Interview, further search and consideration are required. Since the application is under Final Rejection, any submission may not be entered.

Reconsideration and withdrawal are respectfully requested for the rejection of claims 4 to 6 and 8 to 12 under 35 U.S.C. 103 as being unpatentable over *Bunyan U.S. Patent No. 4,305,483* in view of

Guimond U.S. Patent No. 4,122,978, and/or Burger U.S. Patent No. 4,431,120, and/or Watson GB 1,412,282, and with Chang U.S. Patent No. 5,948,742 being made of record.

The present invention is directed to a pressurized container for the delivery of a biocide, said container containing a mixture consisting essentially of a biocide and carbon dioxide in the form of a vapor, liquid/vapor mixture or supercritical fluid, wherein said biocide is selected from the group consisting of (1) chlorine gas, (2) chlorine gas and alkali metal hypochlorite, (3) chlorine gas and alkaline earth metal hypochlorite and combinations thereof.

The technical problem solved by the present invention is to provide a safe device for disinfection containing a biocide composition. The technical problem is solved by the pressurised containers of the invention, which contain carbon dioxide and a biocide in which chlorine gas or mixtures of chlorine gas are always present. In the containers of the invention, carbon dioxide has a propellant function. In addition, it also increases the biocide effect of the biocide substance, therefore making it possible to keep the amount of biocide to a minimum and, as a consequence, to reduce the amount of chlorine residues on the disinfected surface (see page 5, lines 5-16 of the application).

According to the Office Action, pending claims 5, 6, 8, 11 and 12 are obvious over *Bunyan* in view of *Guimond et al.* *Bunyan* relates to "a surgically active antiseptic composition...obtained by mixing together a protein and a substantially stoichiometric amount of an aqueous solution of a hypochlorite". *Guimond* relates to a pressurized package for dispensing liquid products in a finely disperse spray pattern without requiring the dilution and aerosol effect created by the dispensing of substantial amounts of propellant with the product. The attention of the Patent Examiner is respectfully directed in particular to the abstract and to col. 1, lines 56-66. By means of the device of *Guimond*, the liquid can be dispensed with less than 10 percent dilution by the gaseous propellant. Thus, the technical problem considered by *Guimond* is different from that of the present invention and the solution it offers (which resides in the container itself, or, more precisely, in the elements of this container and in the way they are assembled) does not provide any useful information for the inventive concept of the present invention.

According to the Applicants, a person skilled in the art and faced with the problem of increasing the biocide activity of hypochlorites would have not considered *Bunyan* as a useful source of information. This is because *Bunyan* teaches a reaction product. Moreover, the Applicants submit that the fact that CO₂ is mentioned

as a propellant in *Guimond* is not sufficient to suggest that a person skilled in the art would replace the protein of *Bunyan* with CO₂. Even if the skilled person had combined *Guimond* with *Bunyan*, he would not have replaced the protein with CO₂, but would have rather added CO₂, thus obtaining a mixture of CO₂, a protein and a stoichiometric amount of an aqueous solution of a hypochlorite. Hence, none of the references teach the combination of carbon dioxide with chlorine gas as biocide.

Claims 4 and 10 were rejected over *Bunyan/Guimond* in view of *Burger* and *Watson* respectively under 35 U.S.C. 103.

As far as claim 4 is concerned, the Patent Examiner argues that "*Bunyan in view of Guimond discloses all the elements of claim 4 with the exception of adding anhydrous salts to the container*". This statement is respectfully traversed because the combination of *Bunyan* and *Guimond* does not teach or suggest a pressurized container containing CO₂ and a biocide which is always chlorine gas as claimed.

The Patent Examiner also argues that silica is a well known equivalent of anhydrous salts. Silica is added to the containers of *Burger* as a hydrocarbon adsorbent, while the anhydrous salt is added to the containers of the present invention in order to

adsorbe moisture since chlorine gas is claimed and used. (See page 4, line 28 to page 5, line 2 of the present Specification). *Burger* does not teach that silica is equivalent to anhydrous salts. Thus, one skilled in the art and having knowledge of *Burger* would not have been motivated to replace silica with an anhydrous salt.

Moreover, it is respectfully pointed out that the problem solved by *Burger* is to provide "an aerosol dispensing system that avoids the use of halogenated hydrocarbon propellants and permits the dispensing of compositions having a wide range of viscosities with inexpensive propellants from conventional containers" (see *Burger*, col. 1, lines 9-13). The solution offered by *Burger* consists in an aerosol system which markedly differs from the present invention. In conclusion, the Applicants submit that *Burger* does not provide any teaching that would have led a person skilled in the art to select silica as a component of the mixture contained in the canisters of the present invention, let alone to replace silica with anhydrous salts.

With regard to claim 10, the Office Action argues that "*Bunyan/Guimond* discloses all the elements of claim 10 with the exception of the biocide in paste gel or solid form". This contention is not convincing and is respectfully traversed. This

is because no combination of references teaches the use of carbon dioxide plus the biocide chlorine gas.

More particularly, the *Bunyan U.S. Patent No. 4,035,483* in column 3 in lines 15 to 21, discloses a composition that is a surgically active antiseptic, and that is effective in controlling or preventing infection in wounds, comprises a surgically active concentration of the reaction product obtained by mixing together a protein and a substantially stoichiometric amount of an aqueous solution of a hypochlorite.

Bunyan in column 6, in lines 30 to 35, discloses a biological, surgically effective antiseptic, dressing which comprises a film of a film-forming biologically acceptable organic substance and a reaction product of an aqueous solution of hypochlorite with at least a substantially stoichiometric amount of protein.

Thus, *Bunyan* fails to teach or to suggest the claimed combination of carbon dioxide and the biocide chlorine gas.

More particularly, the *Guimond U.S. Patent No. 4,122,978* discloses in column 3 in lines 35 to 41 referring to FIG. 1, the dispensing package includes a container 10 which is constructed in conventional manner. The liquid product 12 to be dispensed, a

deodorant formulation in ethyl alcohol, for example, is stored at the lower portion of container 10 with a pressurized head 14 of suitable gaseous propellant such as carbon dioxide or nitrous oxide above the liquid product.

Thus, *Guimond* fails to teach or to suggest the claimed combination of carbon dioxide plus the biocide chlorine gas.

More particularly, the *Burger U.S. Patent No. 4,431,120* discloses in column 1, in lines 49 to 68 and in column 2, line 1, a system which comprises a wet composition that may have a viscosity in the range of about 0.5 centistokes to about 10,000 centistokes, or of 50 seconds or even longer measured with the No. 3 Zahn cup, and may have a pH ranging from highly acid, e.g., 1-2, to highly alkaline, e.g., 14-15. The composition comprises at least three categories of constituents:

(A) hydrocarbon-adsorbent solids such as high surface area amorphous silicas, in an amount sufficient to adsorb substantially all of the hydrocarbon propellant, optionally including lesser amounts of water-encapsulating solids;

(B) at least one hydrocarbon propellant, meaning a propellant that is made of carbon and hydrogen atoms only, substantially all of which is adsorbed by the hydrocarbon-adsorbent solids, and in

amounts comprising about 6 to about 11 times the weight of the hydrocarbon-adsorbent solids; and

(C) a liquid composition that is present in an amount sufficient to make the composition wet, and which may contain water.

Thus, *Burger* fails to teach or to suggest the claimed combination of carbon dioxide and the biocide chlorine gas.

More particularly, the *Watson GB 1,412,282* discloses on page 1, in lines 9 to 41, the production of hypochlorite ion-containing foams such as are useful, for example, in the treatment of burns and scalds and other skin lesions, and to a pressurized dispenser for such foams.

According to *Watson*, hypochlorite ion-containing foams are of considerable value in the treatment of burns, scalds and other skin lesions. Such foams usually comprise an aqueous foam or foamable base, e.g. an aqueous soap solution, containing a water-soluble source of hypochlorite ions. Because of the chemical instability and reactivity of the hypochlorite ion it is generally necessary to keep the hypochlorite ion source and the foam or foamable base apart until the instant of use. One way of achieving this is by means of a pressurized dispenser of the so-called aerosol type

equipped with a foam nozzle and valve assembly and containing two separate compartments exposed to the pressure of a pressurised propellant. Each compartment communicating with the foam nozzle via the operating valve, one of said compartments containing a foam or foamable base, e.g. an aqueous soap solution, and the other a liquid containing a source of hypochlorite ion, e.g. an aqueous solution of lithium hypochlorite. Upon opening of the valve the contents of the two compartments are co-dispensed through the foam nozzle to provide the hypochlorite ion-containing foam.

Thus, *Watson* fails to teach or to suggest the claimed combination of carbon dioxide and the biocide chlorine gas.

More particularly, the *Chang U.S. Patent No. 5,948,742* in column 2, in lines 45 to 57, discloses a foam forming aerosol cleaning composition that is particularly suited for cleaning bathroom hard surfaces. These formulations of a hard-surface cleaner that include a chelating agent comprised of tri- or tetrapotassium EDTA and/or tri or tetraammonium EDTA afford cleaning compositions that are greatly superior in effecting the removal of bathroom type soil as compared to those containing tetra-sodium EDTA, which has been the standard chelant in commercial cleaning compositions.

Thus, *Chang* fails to teach or to suggest the claimed combination of carbon dioxide plus the biocide chlorine gas.

In summary, in order to distinguish over the prior art of record, the amendment to claim 11 recites a mixture "consisting essentially of" a biocide and carbon dioxide, wherein the biocide is selected from a Markush Group in which "chlorine gas" is always a constituent. The reason for the amendment to the Markush Group is that the prior art references of record fail to disclose the use of "chlorine gas" in any of the biocide combinations set forth in the prior art of record. Also, the use of phraseology "consisting essentially of" has been added in order to eliminate all of the various other types of ingredients which are present in the mixtures of ingredients in the prior art references of record. Thus, it is emphasized that these other ingredients which are essential to the prior art references of record are excluded from the claimed combination of carbon dioxide with the biocide chlorine gas.

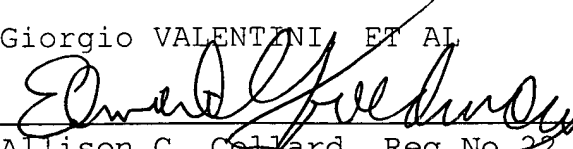
In conclusion, for all the reasons set forth above, the present invention and all the claims are believed to be patentable under 35 U.S.C. 103 over the prior art applied by the Patent Examiner. A prompt notification of allowability is respectfully

requested.

Respectfully submitted,

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Enclosure: 1. Copy Petition 2 Month Extension of Time-Small Entity
2. Appointment of Associate Power of Attorney

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I hereby certify that this correspondence is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on March 7, 2005.


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